Amendments

In the Claims:

The following listing of claims will replace all prior versions, and listings, of claims in the application. Please cancel claims 45-46, 62-63, 66, and 68-70 (claims 1-43 were previously canceled). Please add new claims 44-80. Currently amended claims are shown with additions underlined and deletions in ~~strikethrough text~~. No new matter is added by these amendments.

1.-43. (Canceled)

44. (Currently Amended) A method of quantifying an~~the~~ amount of at least a first monitor peptide~~protein~~ and a second monitor peptide~~protein~~ in a biological sample, ~~the first protein having a first monitor peptide and the second protein having a second monitor peptide,~~ the first monitor peptide and the second monitor peptide being produced by digestion of a~~the~~ first protein and a~~the~~ second protein, respectively, by a proteolytic agent, the product of the digestion of the biological sample being a digested sample, comprising:

binding~~exposing~~ the first monitor peptide to a first binding agent, the first binding agent being a polyclonal antibody;~~and~~

binding a labeled version of the first monitor peptide to the~~a~~ first binding agent, the labeled version of the first monitor peptide being present at a known amount in the digested sample~~, the first monitor peptide bound to the first binding agent and the labeled version of the first monitor peptide bound to the first binding agent being first bound peptides~~;

binding~~exposing~~ the second monitor peptides to a second binding agent, the second binding agent being different from the first binding agent;~~and~~

binding a labeled version of the second monitor peptide to the~~a~~ second binding agent, the labeled version of the second monitor peptide being present at a known amount in the digested sample;~~, the second binding agent being different from the first binding agent,~~

the first monitor peptide bound to the first binding agent, the labeled version of the first monitor peptide bound to the first binding agent, the second monitor peptide bound to the second

binding agent, and the labeled version of the second monitor peptide bound to the second binding agent being bound peptides~~;~~, peptides produced by the digestion of the ~~first protein and the second protein~~biological sample not bound to the first binding agent or the second binding agent being unbound peptides, separating ~~at least some of the~~ bound peptides from ~~at least some of the~~ unbound peptides; ~~and~~

measuring the amount of the first monitor peptide that was separated from ~~at least some of the~~ unbound peptides using a mass spectrometer;

measuring the amount of the labeled version of the first monitor peptide that was separated from unbound peptides;

calculating the amount of the first monitor peptide in the biological sample;

measuring the amount of the second monitor peptide that was separated from unbound peptides;

measuring the amount of the labeled version of the second monitor peptide that was separated from unbound peptides; and

calculating the amount of the second monitor peptide in the biological sample.

45-46. (Canceled)

47. (Currently amended) The method of claim 44, further comprising:

separating ~~at least some of the~~ bound peptides from the first binding agent.

48. (Currently amended) The method of claim 44, wherein the second~~first~~ binding agent is an antibody.

49. (Currently amended) The method of claim 44, wherein the second~~first~~ binding agent is a monoclonal antibody.

50. (Currently amended) The method of claim 44, wherein the second~~first~~ binding agent is a polyclonal antibody.

51. (Currently amended) The method of claim 44, wherein the second~~first~~ binding agent is an RNA ~~aptamer~~aptamer.

52. (Currently amended) The method of claim 44, wherein the at least one of the first binding agent or the second binding agent is a recyclable binding agent.

53. (Previously presented) The method of claim 44, further comprising:

preparing the labeled version of the first monitor peptide.

54. (Previously presented) The method of claim 44, wherein the labeled version of the first monitor peptide includes a stable isotope.

55. (Currently amended) The method of claim 44, further comprising:

attaching~~wherein~~ the first binding agent ~~is attached~~ to a support.

56. (Currently amended) The method of claim 44, further comprising:

attaching~~wherein~~ the first binding agent ~~is attached~~ to a packed column.

57. (Currently amended) The method of claim 44, further comprising:

attaching~~wherein~~ the first binding agent ~~is attached~~ to a monolithic porous support.

58. (Currently amended) The method of claim 44, further comprising:

attachingwherein the first binding agent is attached to a mesh.

59. (Currently amended) The method of claim 44, further comprising:

attachingwherein the first binding agent is attached to magnetic beads.

60. (Previously presented) The method of claim 44, wherein the first monitor peptide and the second monitor peptide are selected for optimal differential detection in the mass spectrometer.

61. (Currently amended) A method for quantifying the amount of a target protein in a biological sample, the target protein including a monitor peptide produced by digestion of athe biological sample by a proteolytic agent, the product of the digestion of the biological sample being a digested sample,the mixture of the digested biological sample and a labeled version of the monitor peptide being a peptide mixture, comprising:

bindingexposing the peptide mixture to an antibody that binds to the monitor peptide to an polyclonal antibodyand to the labeled version of the monitor peptide to produce bound monitor peptides;

binding a labeled version of the monitor peptide to the polyclonal antibody, the labeled version of the monitor peptide being present at a known amount in the digested sample;

the monitor peptide bound to the polyclonal antibody and the labeled version of the monitor peptide bound to the polyclonal antibody being bound peptides, peptides produced by digestion of the biological sample and not bound to the polyclonal antibody being unbound peptides, separating at least some of the bound monitor peptides from unbound peptidesat least some other peptides of the peptide mixture; and

measuring the relative amounts of the monitor peptide separated from ~~the at least some other peptides of the peptide mixture~~ unbound peptides and the labeled version of the monitor peptide separated from the ~~at least some other peptides of the peptide mixture~~ unbound peptides using a mass spectrometer; and

calculating the amount of the monitor peptide in the biological sample.

62-63. (Canceled)

64. (Previously presented) The method of claim 61, further comprising:

preparing the labeled version of the monitor peptide.

65. (Previously presented) The method of claim 61, wherein the labeled version of the monitor peptide includes a stable isotope.

66. (Canceled)

67. (Currently amended) A method for quantifying the amount of a ~~target protein in a biological sample, the target protein including a~~ monitor peptide produced by digestion of a~~the~~ biological sample by a proteolytic agent, the product of the digestion of the biological sample being a digested sample, ~~the mixture of the digested biological sample and a labeled version of the monitor peptide being a peptide mixture,~~ comprising:

binding~~exposing the peptide mixture to a binding agent that specifically binds to~~ the monitor peptide to a polyclonal antibody formulated to specifically bind to the monitor peptide or a labeled version of the monitor peptide~~and to the labeled version of the monitor peptide to produce bound monitor peptides~~;

binding the labeled version of the monitor peptide to the polyclonal antibody, the labeled

version of the monitor peptide being present at a known amount in the digested sample;

the monitor peptide bound to the polyclonal antibody~~binding agent~~ and the labeled version of the monitor peptide bound to the polyclonal antibody~~binding agent~~ being bound peptides, peptides produced by the digestion of the biological sample not bound to the polyclonal antibody~~binding agent~~ being unbound peptides, separating ~~at least some of the~~ bound ~~monitor~~ peptides from unbound peptides~~at least some other peptides of the peptide mixture~~; ~~and~~

measuring the relative amounts of the monitor peptide separated from unbound peptides ~~at least some other peptides of the peptide mixture~~ and the labeled version of the monitor peptide separated from unbound peptides~~the at least some other peptides of the peptide mixture~~ using a mass spectrometer; and

calculating the amount of the monitor peptide in the biological sample.

68-70. (Canceled)

71. (Previously presented) The method of claim 67, further comprising:

preparing the labeled version of the monitor peptide.

72. (Previously presented) The method of claim 67, wherein the labeled version of the monitor peptide includes a stable isotope.

73. (New) The method of claim 44, wherein the separating causes unbound peptides having a total mass to be separated from bound peptides having a total mass, the total mass of unbound peptides separated from bound peptides being about 100 fold greater than the total mass of bound peptides.

74. (New) The method of claim 44, wherein the first binding agent is created using the first monitor peptide or a non-materially modified version of the first monitor peptide.

75. (New) The method of claim 44, further comprising:

creating the first binding agent using the first monitor peptide or a non-materially modified version of the first monitor peptide.

76. (New) The method of claim 61, wherein the separating causes unbound peptides having a total mass to be separated from bound peptides having a total mass, the total mass of unbound peptides separated from bound peptides being about 100 fold greater than the total mass of bound peptides.

76. (New) The method of claim 61, wherein the polyclonal antibody is created using the monitor peptide or a non-materially modified version of the monitor peptide.

77. (New) The method of claim 61, further comprising:

creating the polyclonal antibody using the monitor peptide or a non-materially modified version of the monitor peptide.

78. (New) The method of claim 67, wherein the separating causes unbound peptides having a total mass to be separated from bound peptides having a total mass, the total mass of unbound peptides separated from bound peptides being about 100 fold greater than the total mass of bound peptides.

79. (New) The method of claim 67, wherein the polyclonal antibody is created using the monitor peptide or a non-materially modified version of the monitor peptide.

80. (New) The method of claim 67, further comprising:

creating the polyclonal antibody using the monitor peptide or a non-materially modified version of the monitor peptide.